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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/371,692	08/10/99	KALSI	05770/082001

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EXAMINER

PEREZ, G

ART UNIT

PAPER NUMBER

2834

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DATE MAILED: 12/10/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/371,692

Applicant(s)

KALSI, SWARN S.

Examiner

Guillermo Perez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 1999 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 14) ☒ Notice of References Cited (PTO-892)
- 15) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 17) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other: _____

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DETAILED ACTION

Drawings

The drawings are objected to because Figure 1 fail to show the reference number of the rotor winding. Correction is required.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 250 words. It is important that the abstract not exceed 250 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 and 17 to 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "said electromagnetic shield member" in line 2.

There is insufficient antecedent basis for this limitation in the claim.

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Claim 17 recites the limitation "the rotor assembly and stator assembly" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1 to 2, 12, 14 to 18 and 20 to 21 rejected under 35 U.S.C. 102(b) as being anticipated by Rabinowitz (U.S. Pat. No. 4,176,291).

Referring to claim 1, Rabinowitz discloses a superconducting electric motor (figure 1) comprising: a rotor assembly (6) including: at least one superconducting winding (44) which, in operation, generates a flux path within the rotor assembly; and a support member (48) which supports the at least one superconducting winding, the rotor assembly configured to operate in a synchronous mode of operation at temperatures wherein the superconducting winding exhibits superconducting characteristics and in a steady-state induction mode of operation at temperatures wherein the superconducting winding exhibits non-superconducting characteristics (column 9, lines 20 to 37).

Referring to claim 2, Rabinowitz discloses that the rotor assembly includes induction structure for carrying current at levels sufficient to allow the steady- state induction mode of operation (18).

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Referring to claim 12 and 18, Rabinowitz discloses a stator assembly electromagnetically coupled to the rotor assembly; and an adjustable speed drive provides an electrical signal to the stator assembly (84).

Referring to claim 14, Rabinowitz discloses that the superconducting winding includes a high temperature superconductor (column 8, lines 12 to 19).

Referring to claim 15, Rabinowitz discloses that the superconducting winding is a racetrack shaped winding (44).

Referring to claim 16, Rabinowitz discloses that the support member is formed of aluminum (column 5, lines 60 to 61).

Referring to claim 17, Rabinowitz discloses a superconducting electric motor comprising: a rotor assembly including at least one superconducting winding comprising a high temperature superconductor, the superconducting winding, in operation, generating flux within the rotor assembly, the rotor assembly and stator assembly configured to operate in a synchronous mode of operation at temperatures wherein the superconducting winding exhibits superconducting characteristics and in an induction mode at temperatures wherein the superconducting winding exhibits non-superconducting characteristics; a cryostat (column 4, lines 14 to 15) surrounding the rotor assembly to maintain the at least one superconducting winding at cryogenic temperatures; and induction structure, which during operation, carries current at levels sufficient to allow the steady-state induction mode of operation of the superconducting electric motor, the induction structure including: a support member which supports the

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at least one superconducting winding; and an electromagnetic shield surrounding the cryostat and the at least one superconducting winding.

Referring to claim 20, Rabinowitz discloses that the support member includes a plurality of laminations, each lamination lying in a plane parallel to magnetic field flux lines extending through the laminations during operation of the superconducting electric motor (figure 2).

Referring to claim 21, Rabinowitz discloses a method of operating a superconducting electric motor of the type including a rotor assembly including at least one superconducting winding which, in operation, generates a flux within the rotor assembly, and a support member which supports the at least one superconducting winding, the method comprising: monitoring the temperature of the superconducting winding; operating the superconducting motor in a synchronous mode at a temperature wherein the superconducting winding exhibits superconducting characteristics; and operating the superconducting motor in a steady state induction mode at a temperature wherein the superconducting winding exhibits non-superconducting characteristics.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 3 to 11, 13, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabinowitz in view of Renard et al. (U.S. Pat. No. 3,904,901).

Rabinowitz discloses a superconductive electric motor as disclosed on item 1 above and also that at least a portion of the induction structure is spaced from the at least one superconducting winding by a thermal isolation vacuum region (19); and that said at least portion of the induction structure spaced from the at least one superconducting winding by a thermal isolation vacuum region includes an electromagnetic shield member (18); and a cryostat positioned between the thermal isolation vacuum region and the electromagnetic shield member (column 6, lines 67 to 68 and column 7, lines 1 to 8); and that said electromagnetic shield member includes a conductive, non-magnetic material; and that the induction structure includes the support member which supports the at least one superconducting winding. However, Rabinowitz does not disclose that that the rotor assembly includes induction structure configured to allow the superconducting motor to generate a starting torque which is at least 50% of the rated torque in the induction mode of operation; nor that the rotor assembly includes induction structure configured to allow the superconducting motor to generate a peak torque which is approximately twice the rated torque in the induction mode of operation; nor that the adjustable speed drive provides a signal at a first frequency to the stator to start the superconducting motor in the synchronous mode of operation and provides a signal at a second frequency, less than the first frequency, to the stator in the steady-state induction mode of operation; nor that operating the superconducting motor

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in the synchronous mode includes providing an electrical signal to a stator assembly, electromagnetically coupled to the rotor assembly, the signal having a first frequency; and that operating the superconducting motor in the steady state induction mode includes providing a signal to the stator assembly at a second frequency, less than the first frequency.

Renard et al. disclose that the adjustable speed drive provides a signal at a first frequency to the stator to start the superconducting motor in the synchronous mode of operation and provides a signal at a second frequency, less than the first frequency, to the stator in the steady-state induction mode of operation (column 9, lines 24 to 32); and that the adjustable speed drive provides a signal at a first frequency to the stator to start the superconducting motor in the synchronous mode of operation and provides a signal at a second frequency, less than the first frequency, to the stator in the steady-state induction mode of operation; and that operating the superconducting motor in the synchronous mode includes providing an electrical signal to a stator assembly, electromagnetically coupled to the rotor assembly, the signal having a first frequency (column 8, lines 12 to 58) for the purpose of providing the winding with the necessary current for energization and to start p the rise in the magnetic field during the starting up period.

It would have been obvious at the time the invention was made to modify the superconducting electric motor of Rabinowitz and provide it with an adjustable speed drive providing a signal at a first frequency to the stator to start the superconducting

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motor in the synchronous mode of operation and provides a signal at a second frequency, less than the first frequency, to the stator in the steady-state induction mode of operation; and operating the superconducting motor in the synchronous mode including providing an electrical signal to a stator assembly, electromagnetically coupled to the rotor assembly, the signal having a first frequency; and operating the superconducting motor in the steady state induction mode including providing a signal to the stator assembly at a second frequency, less than the first frequency as disclosed by Renard et al. for the purpose of providing the winding with a current necessary to create a magnetic field to start up the engine.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-5841 for regular communications and (703) 308-5841 for After Final communications.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

GP
December 3, 1999


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SUPERVISORY PATENT EXAMINER
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